

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



1/15

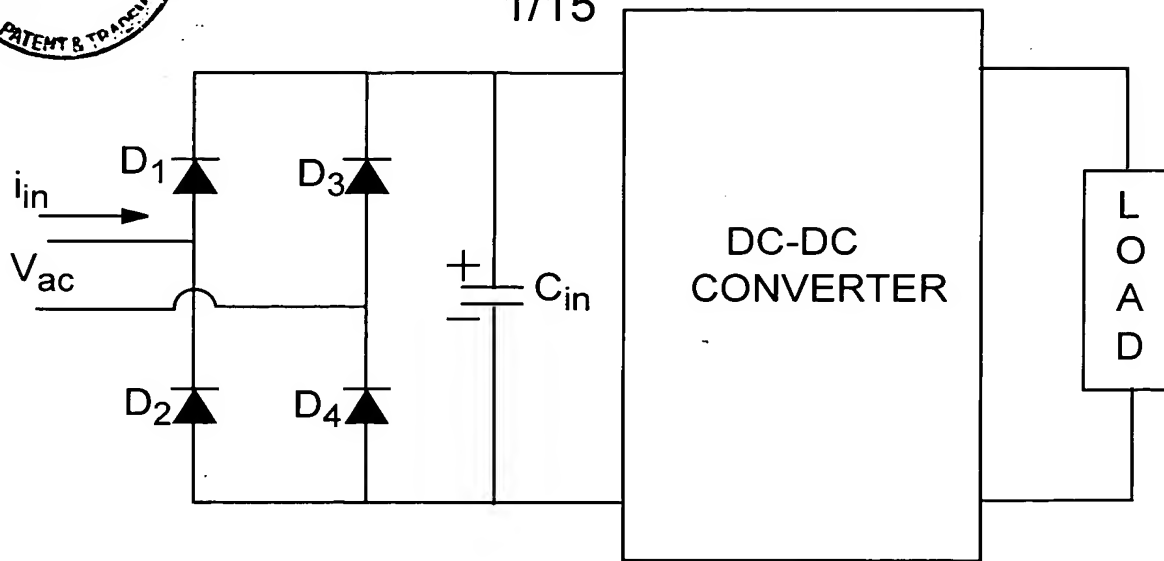


FIG. 1A (PRIOR ART)

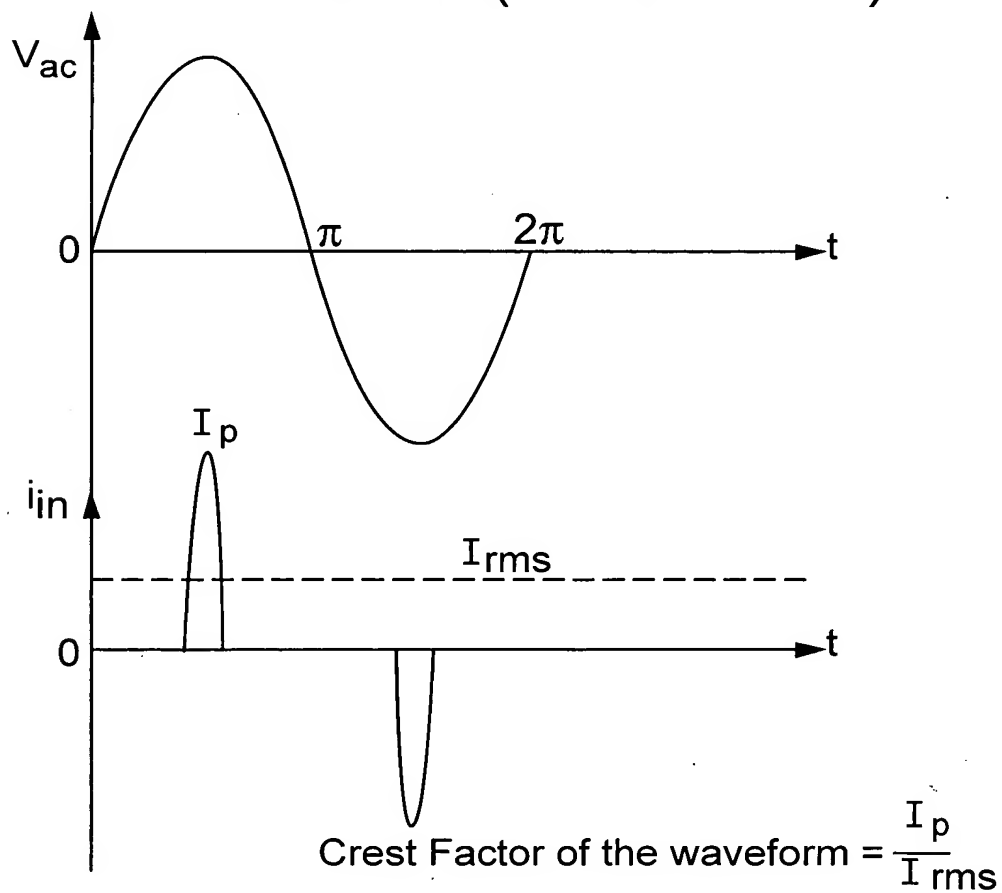


FIG. 1B (PRIOR ART)

2/15

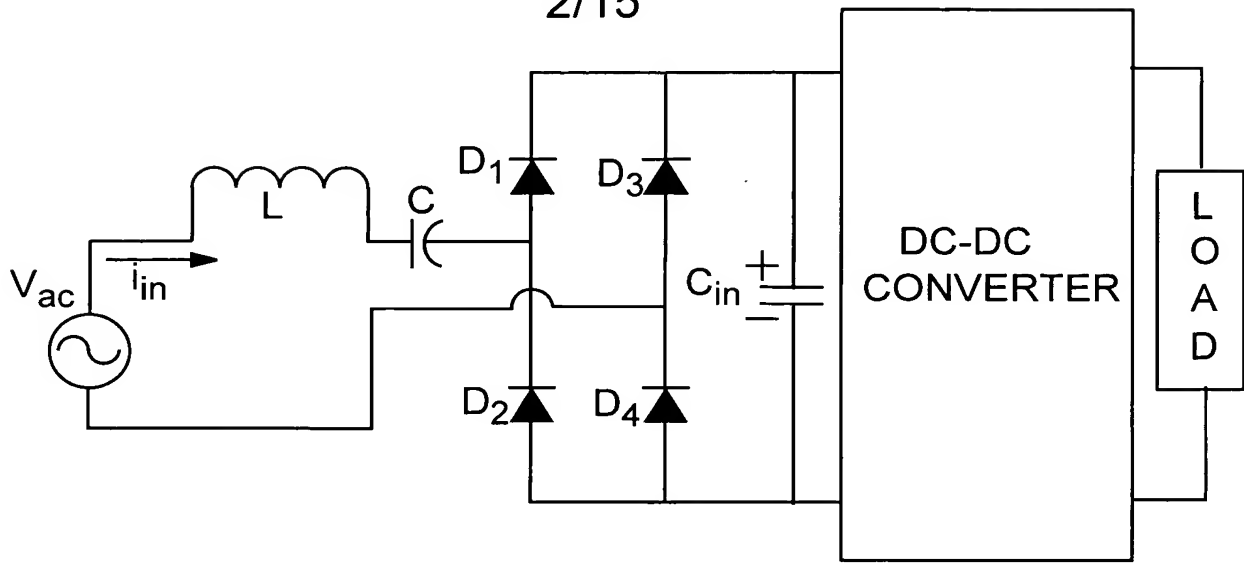


FIG. 2 (PRIOR ART)

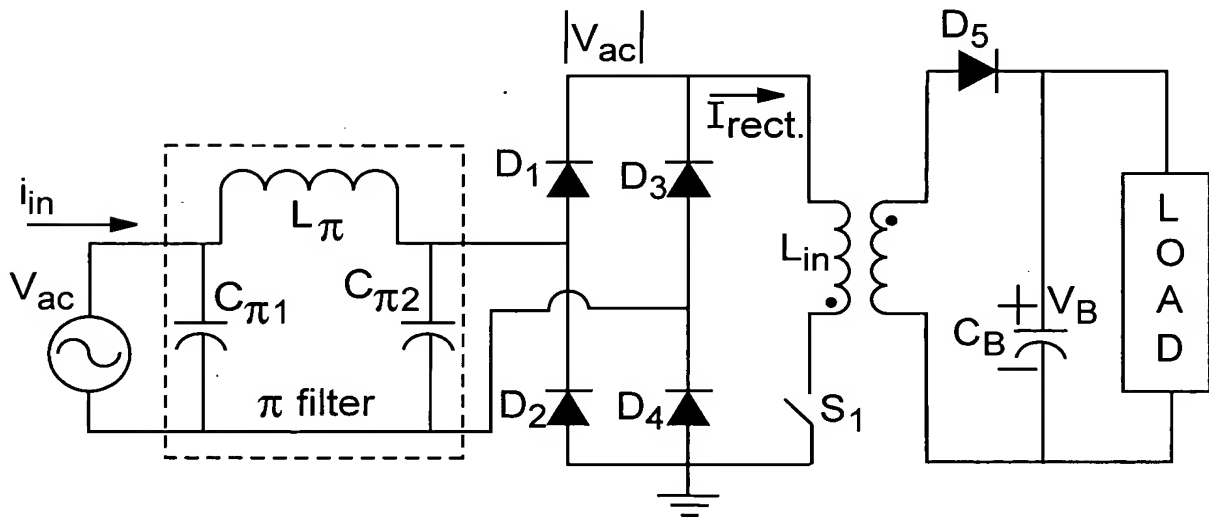
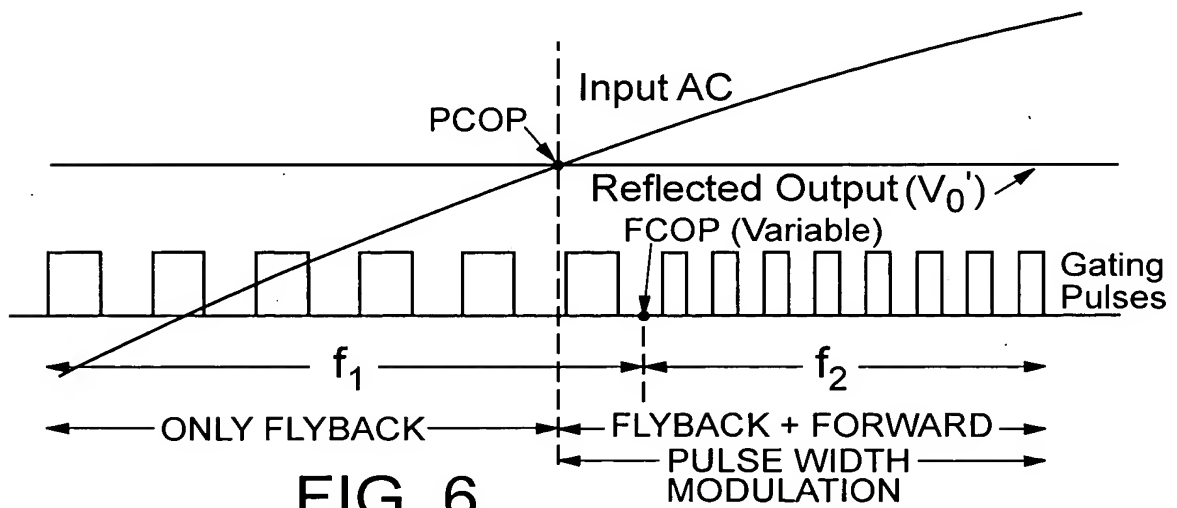
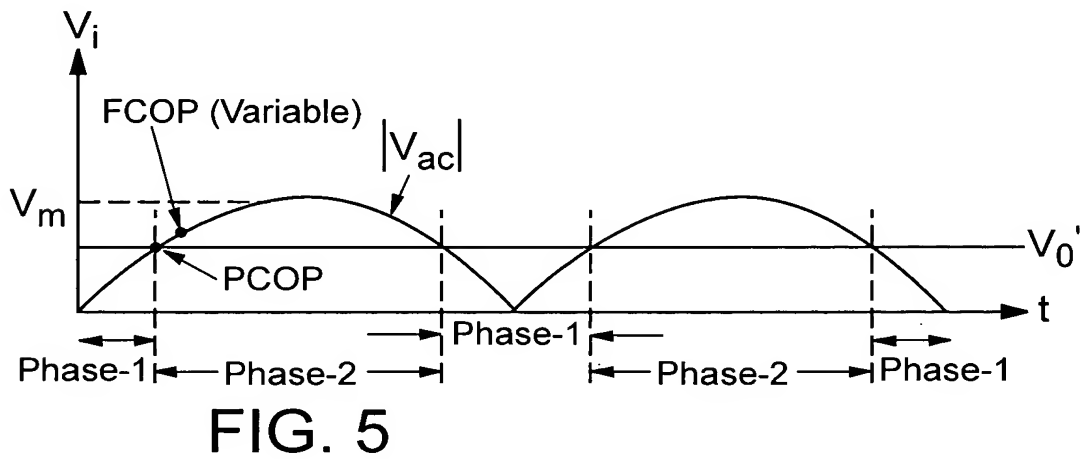
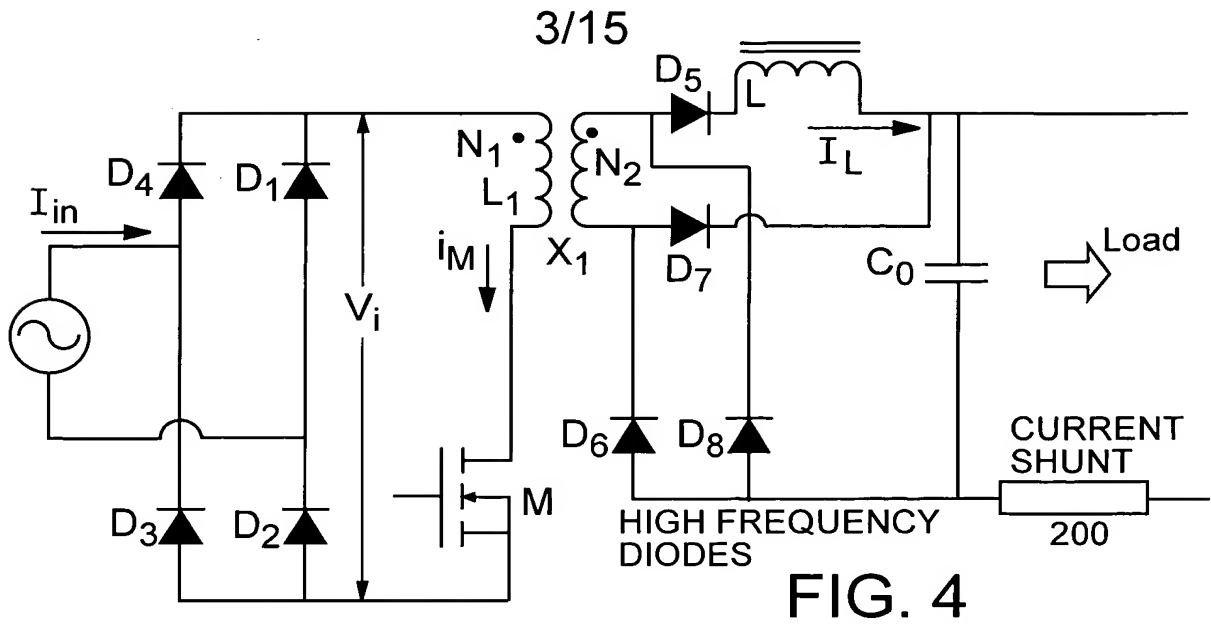
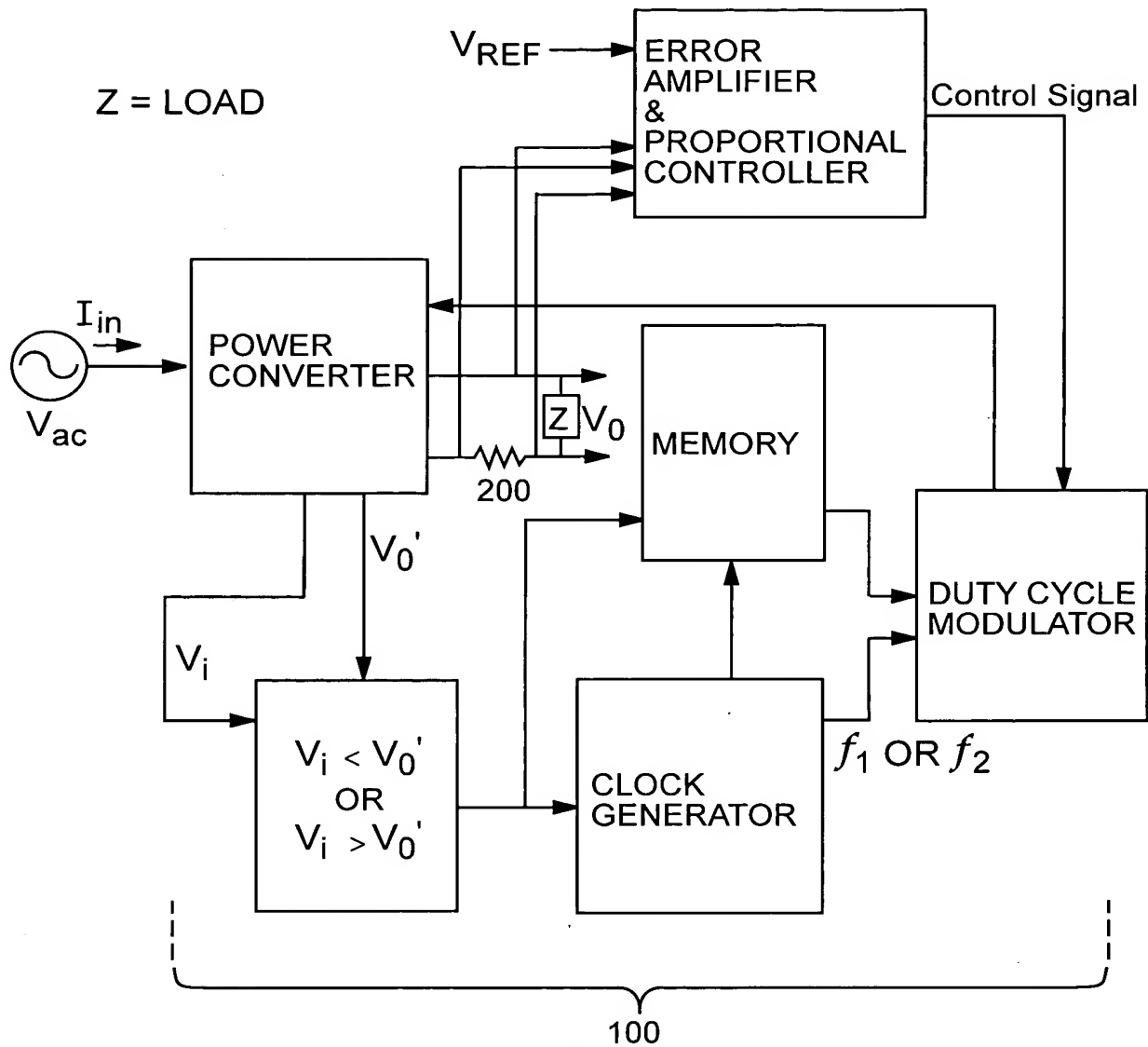


FIG. 3 (PRIOR ART)



4/15



Power Factor and Output Voltage
 Control with Over Current Protection

FIG. 7

5/15

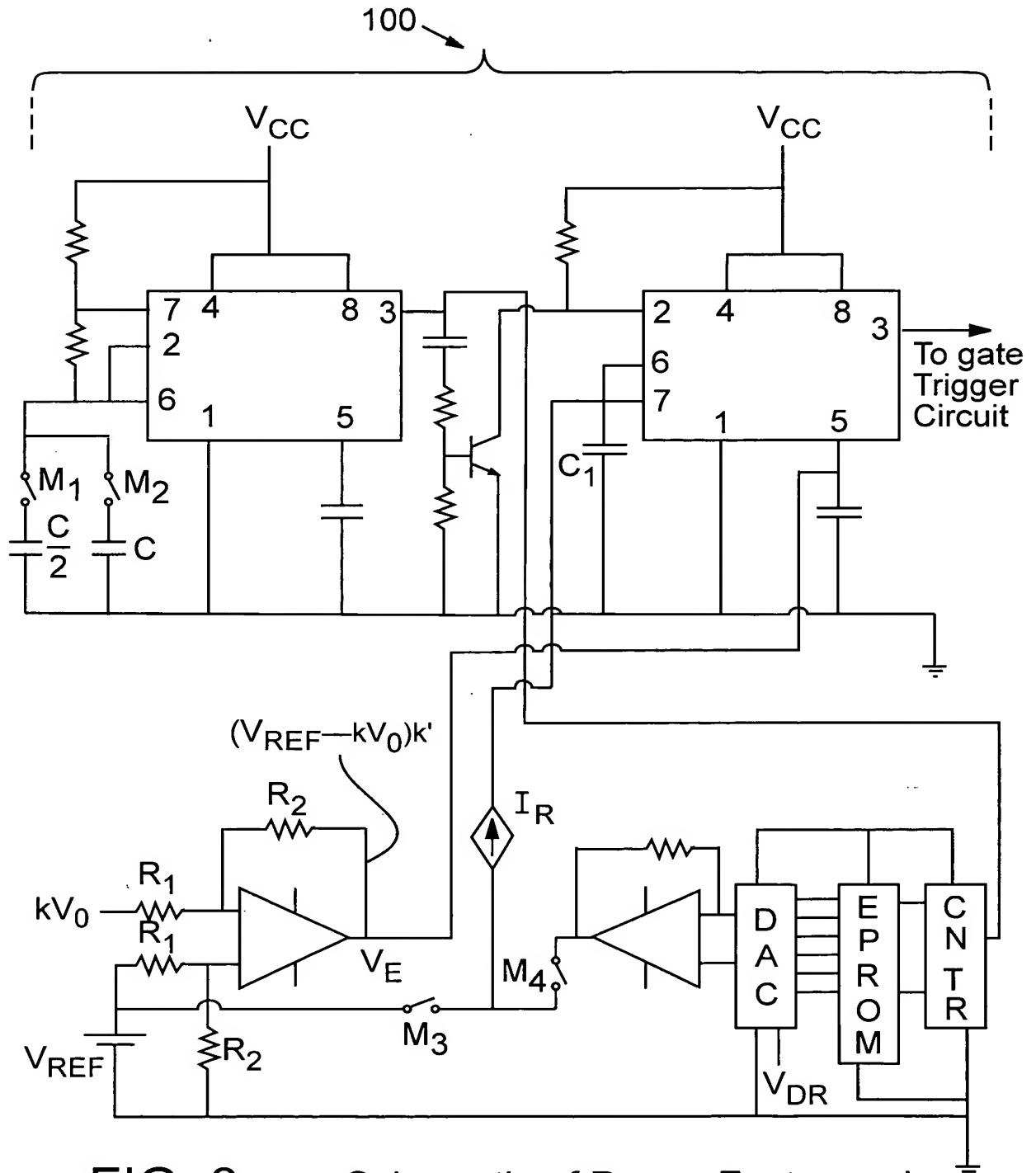
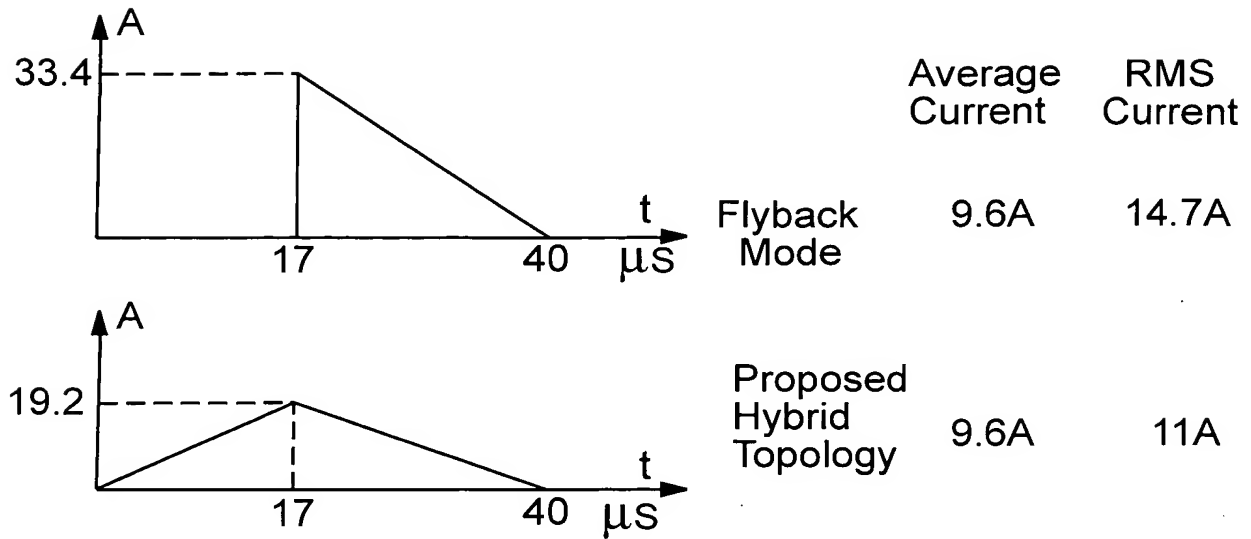


FIG. 8

Schematic of Power Factor and Output Voltage control

6/15



Secondary current waveforms

Hybrid technology helps significantly to reduce both peak and RMS currents

FIG. 9 The secondary current waveforms for a flyback converter and hybrid technology

7/15

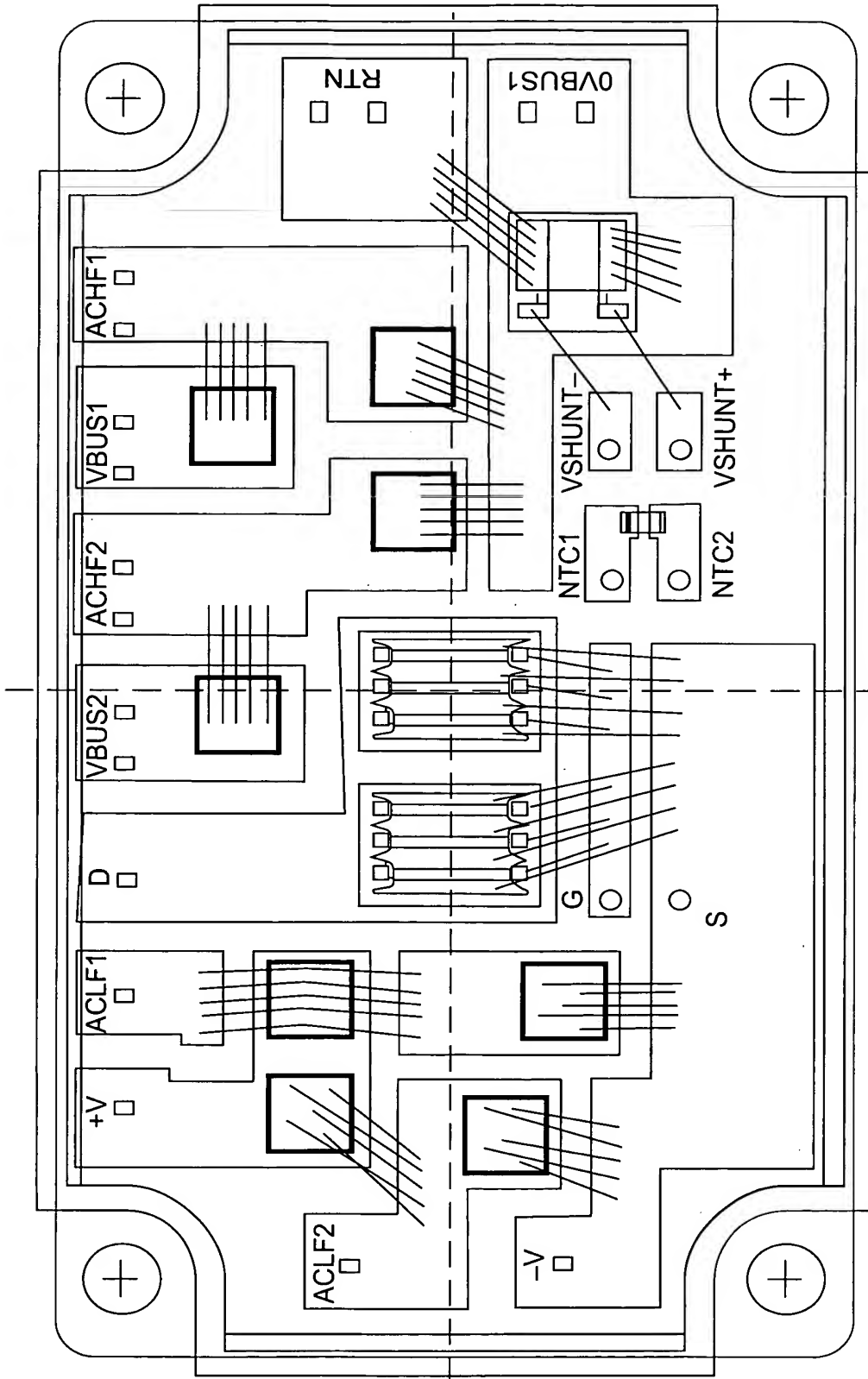


FIG. 10A POWER MODULE – LAYOUT
 SMART CONVERTER MODULE – POWER STAGE

8/15

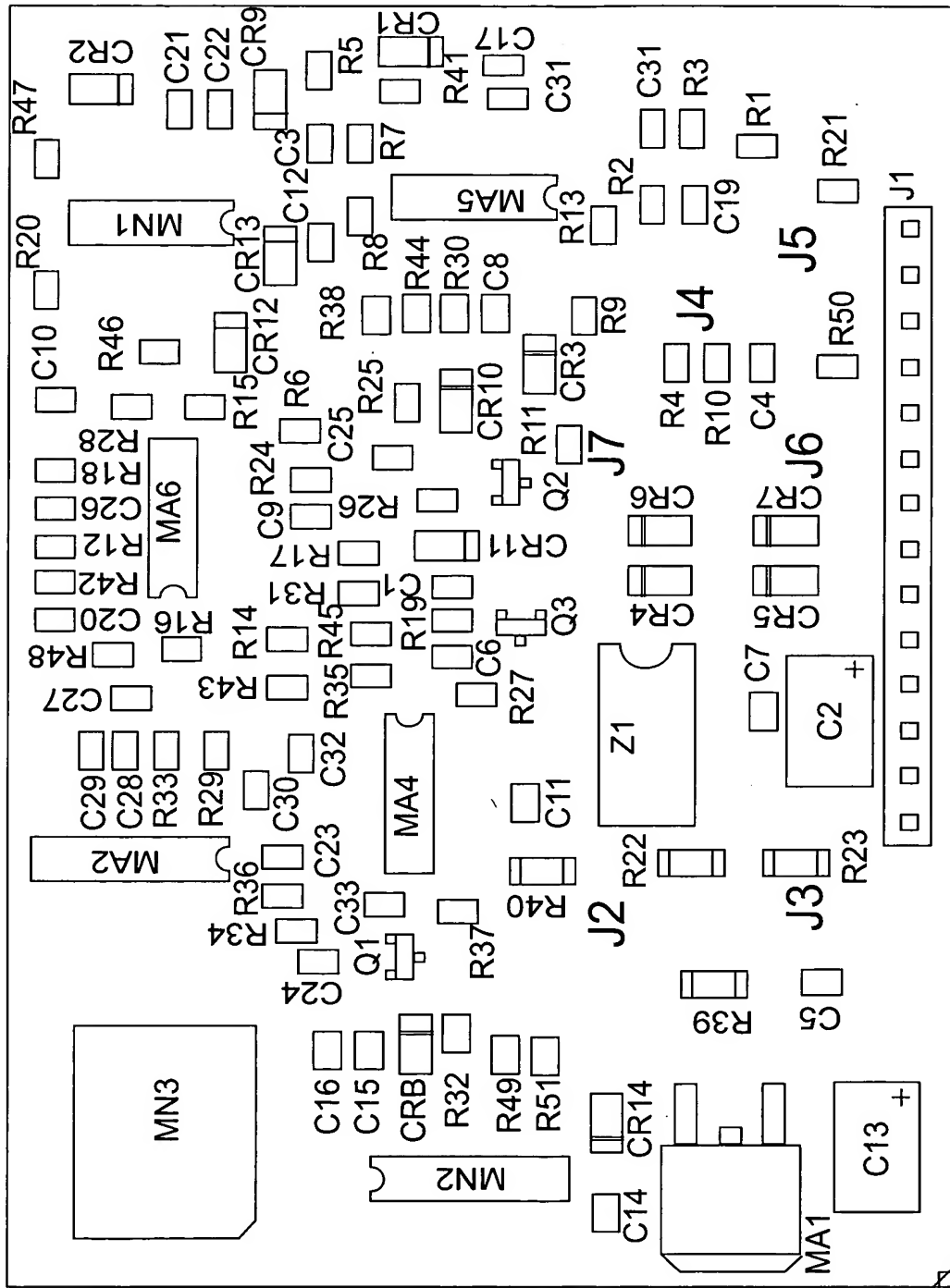
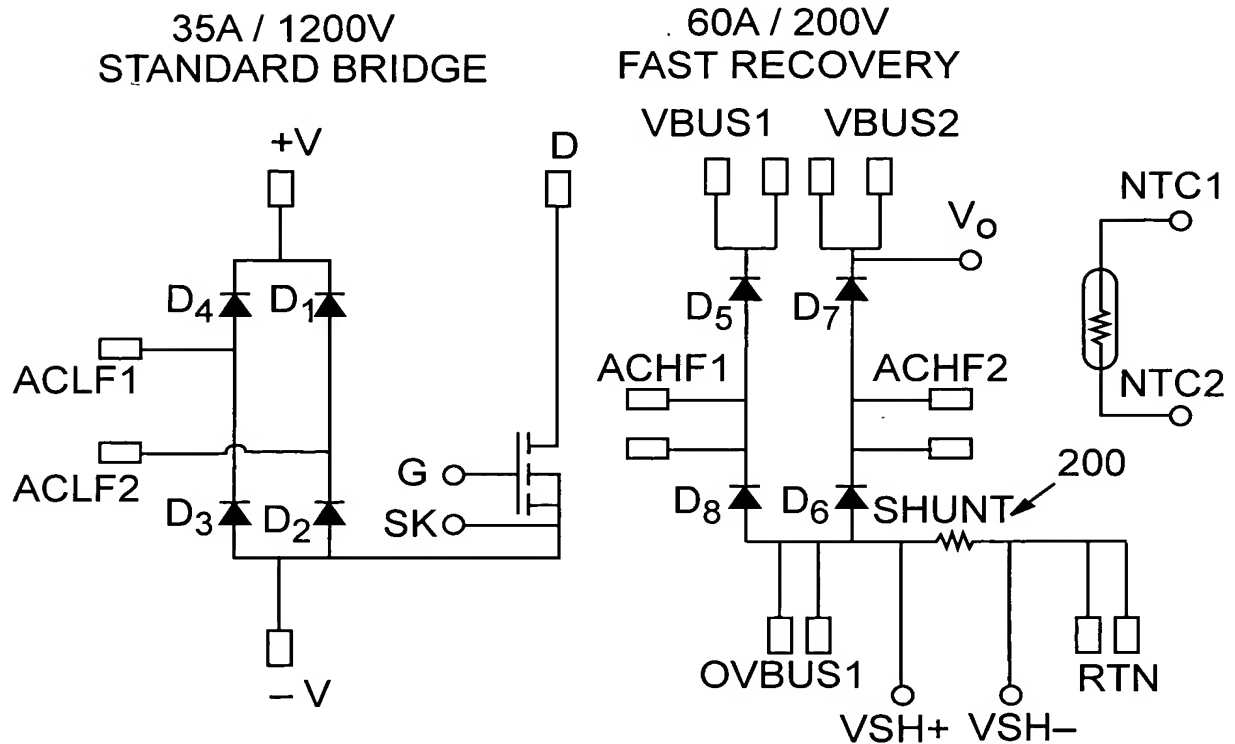


FIG. 10B POWER MODULE – LAYOUT
 SMART CONVERTER MODULE – CONTROL STAGE

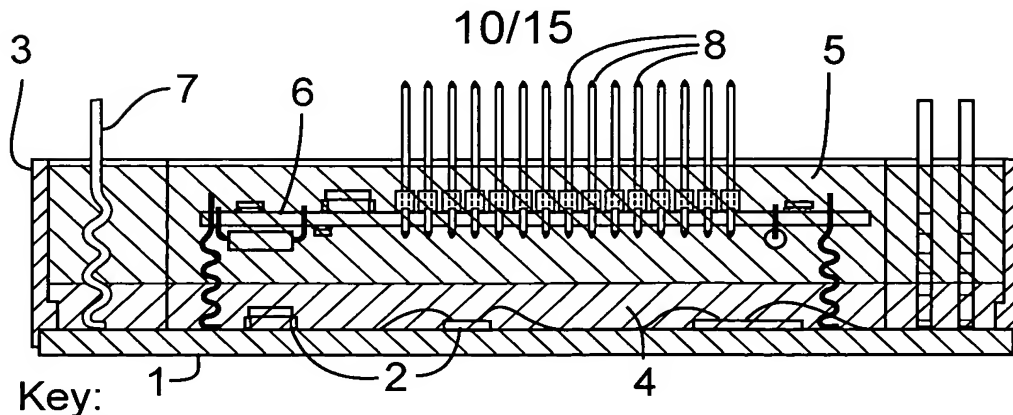
9/15



—○ CONNECTION BETWEEN POWER SUBSTRATE AND PCB
 (INTERNAL CONNECTIONS)

—□ POWER CONNECTION AVAILABLE TO USER

FIG. 11



- Key:
- (1) Module base plate (IMS substrate)
 - (2) Silicon chips and other power components, soldered to the substrate: upper connections to chips via ultrasonically bonded aluminum wires.
 - (3) Moulded outer wall
 - (4) Silicone gel conformal coating over substrate assembly
 - (5) Resin top layer to fill cavity
 - (6) Internal PCB, with all necessary control and protection functions: hybrid SMD/chip construction.
 - (7) 1 x 1.5 solderable power connectors
 - (8) Small signal connector. These connectors are available to the user for control circuit inputs (e.g. power supply points, DC output voltage feedback signal etc.)

FIG. 12 Cross Section of Module

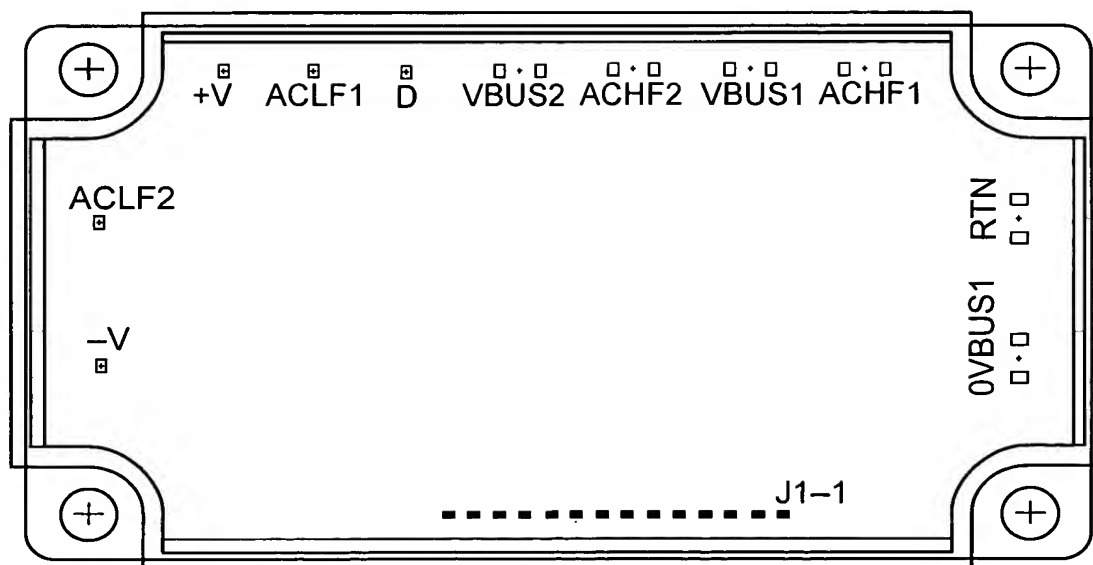


FIG. 13

11/15

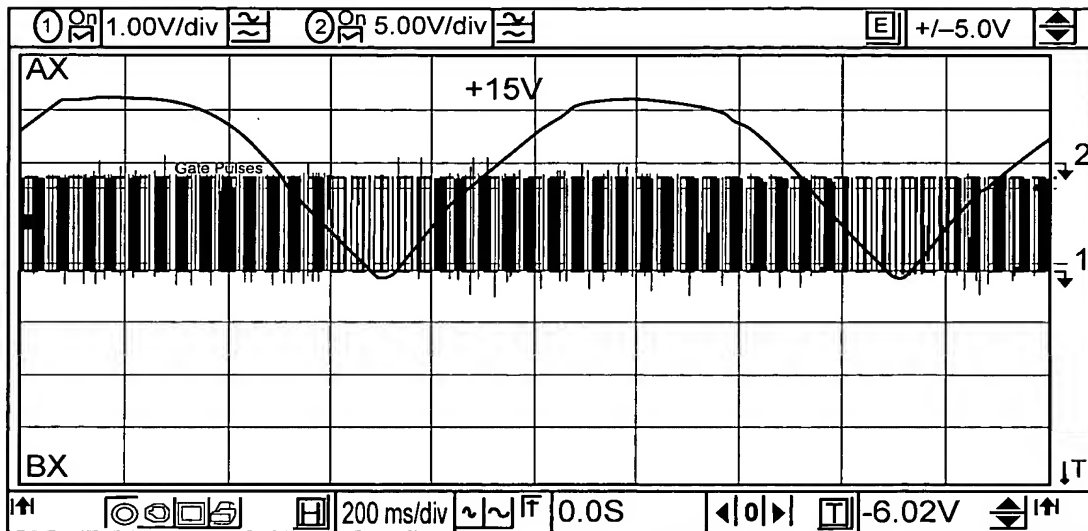


FIG. 14

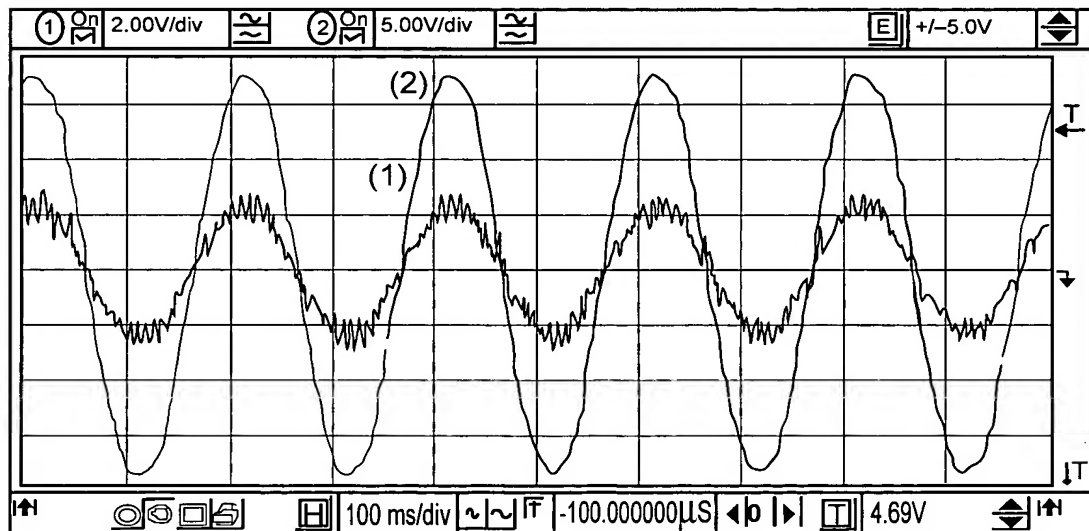


FIG. 15

12/15

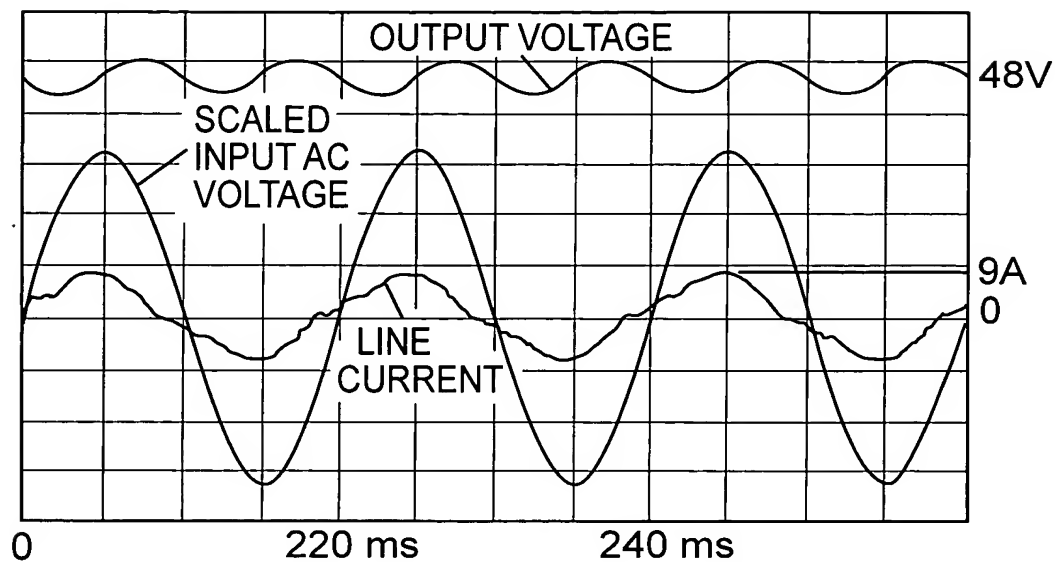


FIG. 16

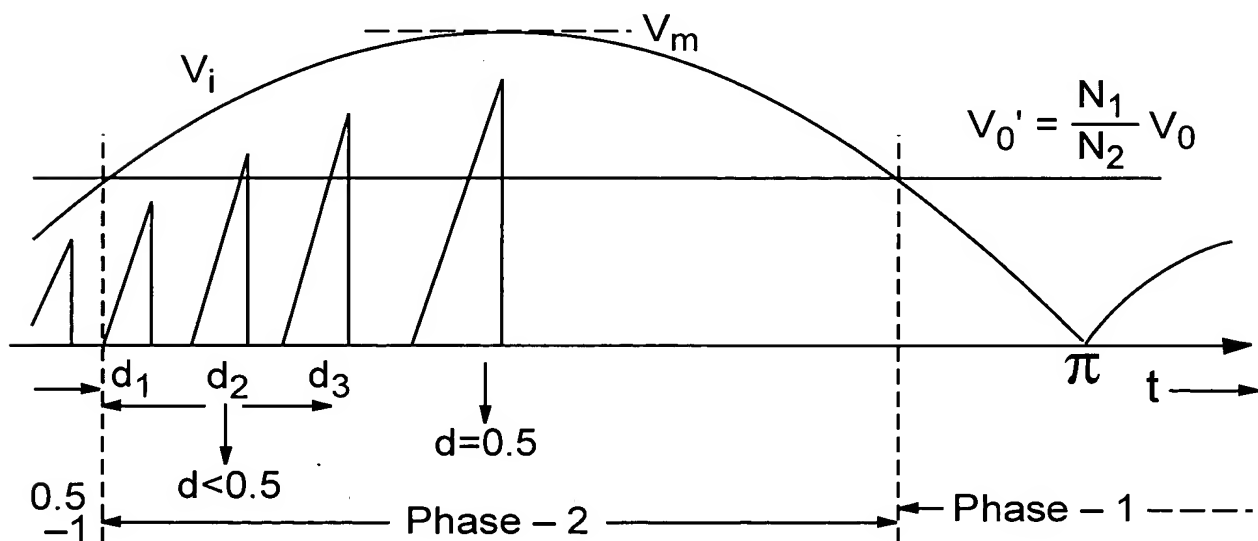
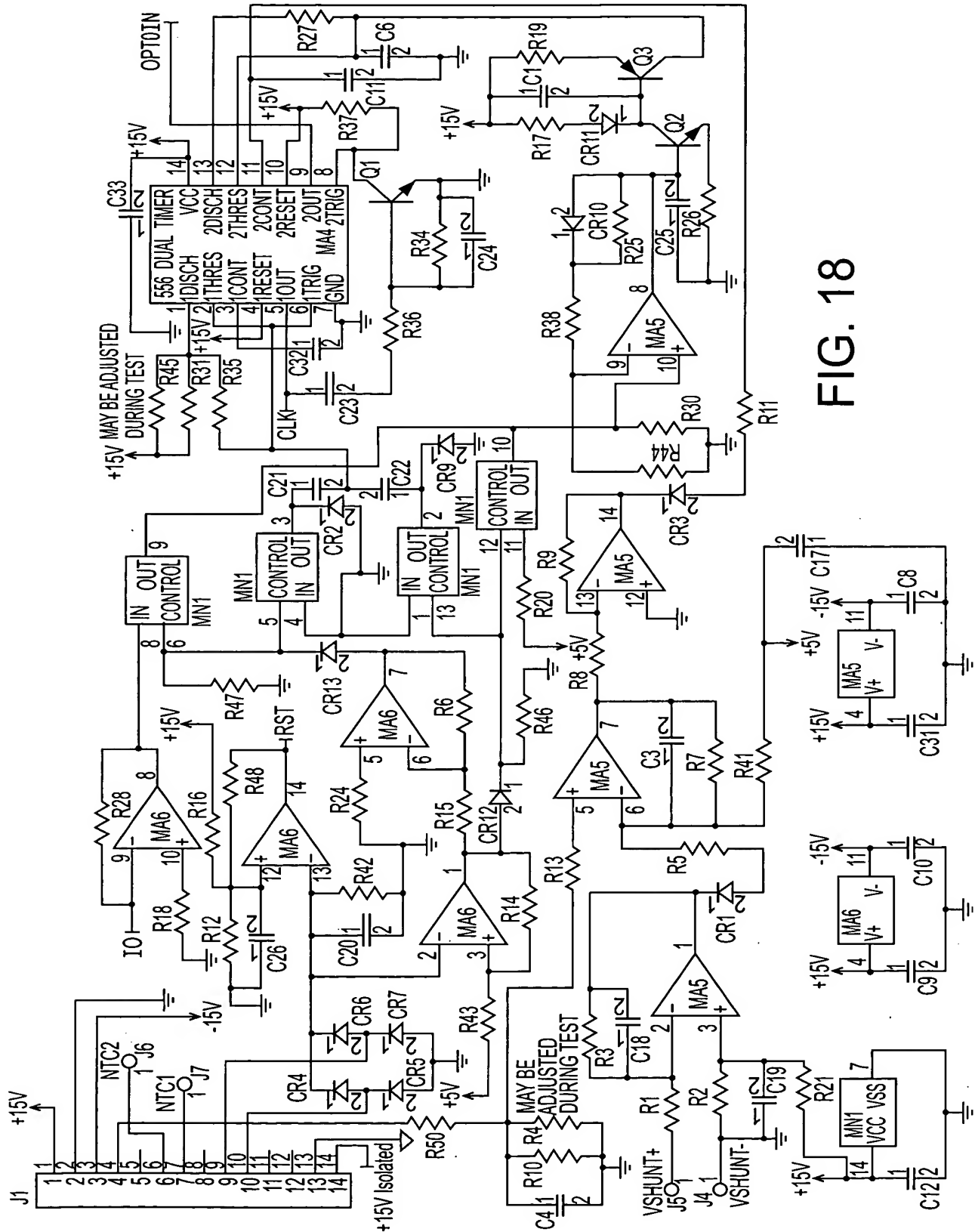


FIG. 17 Primary Side Current Waveforms
 Corresponding to the Maximum Load Condition
 $d_1 < d_2 < d_3 < \dots$

13/15



14/15

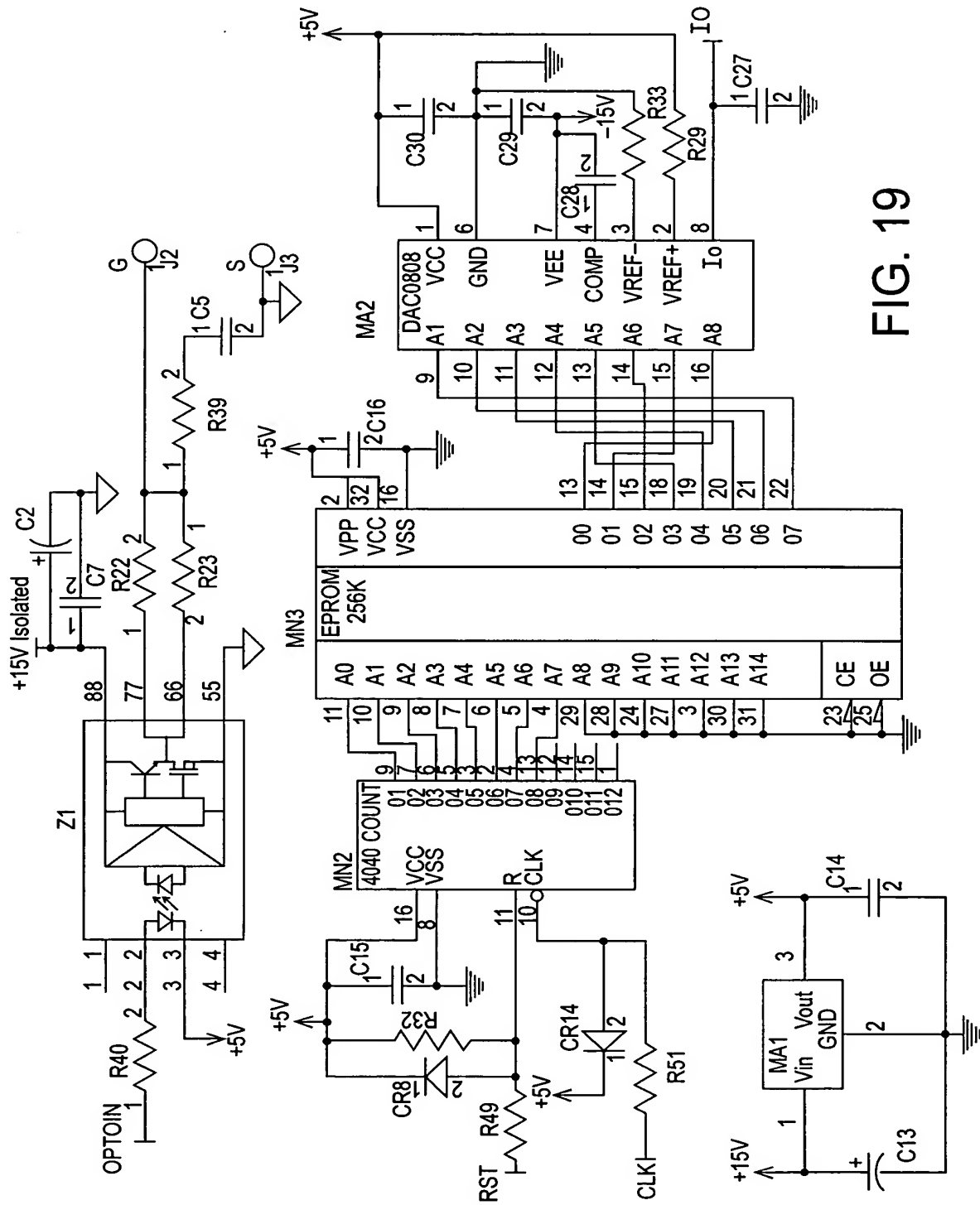


FIG. 19

15/15

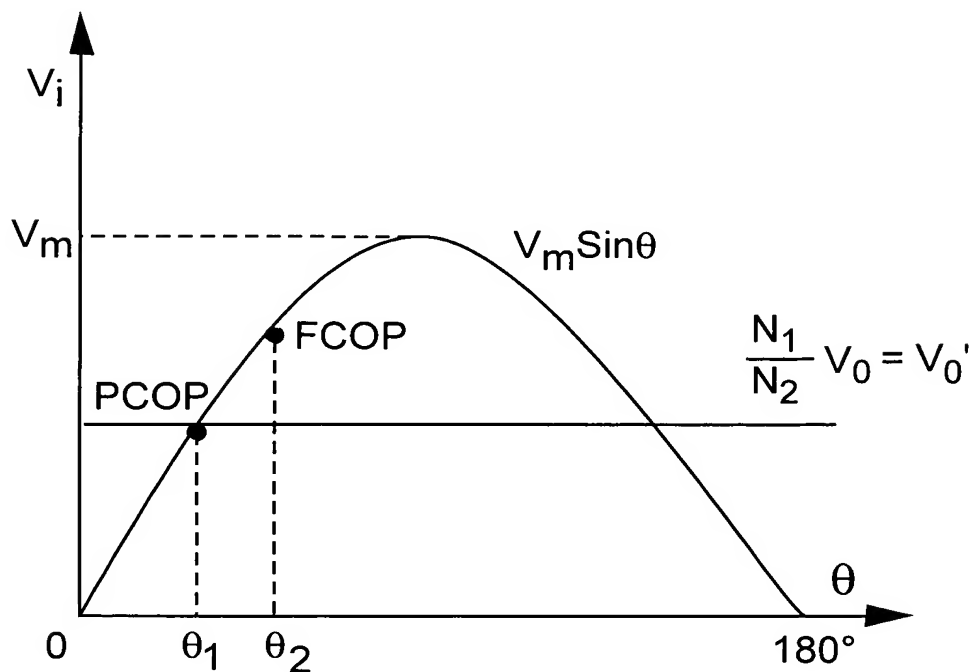


FIG. 20 Diagram showing relative positions of PCOP and FCOP